III. FEP Work Plan 1998-1999

In the fiscal year 1998-1999 the Agency's FEP funded 14 projects at a budgeted cost of $257,000-292,000. The locations of FEP projects are shown on Figure 1. Projects sponsored by the FEP in the 1998-1999 Work Plan are discussed below. The information provided for each project includes a brief project description and project status.

1. PARCEL OWNERSHIP AND ACCESS INFORMATION

Description: The Parcel Ownership and Access Information project provided property ownership information in order for CDFG and the Agency to obtain stream access necessary for conducting aquatic habitat surveys and collecting water temperature data. Landowners along selected streams were identified through the Agency's TRW database. Both the Agency and CDFG were responsible for notifying property owners to gain access to creeks. The budgeted cost for labor and materials to the Agency was $5,000-10,000.

Status: Property owners along Santa Rosa, Mark West, Blucher, Crane, Copeland, Gossage, Washoe, Hinebaugh, and Fife creeks were contacted by mail requesting permission to survey streams on their property.

2. TEMPERATURE COLLECTION

Description: The Agency implements the Temperature Collection project yearly throughout the Russian River watershed in collaboration with CDFG and Mendocino County Water Agency. Stream temperature data is needed in order to determine which streams are within the temperature range suitable for salmonid spawning and juvenile rearing. Because environmental conditions vary annually, an accurate depiction of stream temperature requires data collection in multiple years. Data loggers are deployed annually during the spring and removed the following fall. The Mendocino County Water Agency compiles all temperature data collected by the different agencies into a single database. Temperature data studies began in 1996 and will continue for several years. The budgeted cost in 1998-1999 for labor and materials to the Agency was $5,000-10,000.

Agency staff installs a temperature data logger

Status: In spring 1999, Agency staff installed a total of 31 temperature data loggers in the Russian River at the Mirabel Rubber Dam/Wohler Pool and eight tributaries of the Russian River, including Mark West, Humbug, Porter, Matanzas, Santa Rosa, Brush, Millington, and Oakmont creeks. These data loggers were collected in the fall 1999. The results of this study will be used to develop salmonid enhancement projects, such as revegetation along creeks to provide shade and decrease water temperatures.

3. MCCORMICK SANCTUARY/HOOD MOUNTAIN PARK FISH IMPROVEMENT

Description: The McCormick/Hood Mountain Park Fish Improvement project consists of 1) constructing a rock weir fish passage structure, 2) removing litter and debris in and along Santa Rosa Creek and South Fork Santa Rosa Creek (Millington Creek), and 3) donating equipment to establish a water quality monitoring program. The three components of this project are designed to improve fish passage to the upper reaches of Santa Rosa Creek and Salt Creek, improve aesthetics to park visitors by removing trash and debris dumped along the creek, and establish a program to instruct local high school students in stream ecology. This project will be completed in phases over 3-5 years. The budgeted cost for labor and materials to the Agency was $30,000-35,000.

Status: Landpaths, in collaboration with the Agency and local volunteers, removed litter and debris from Santa Rosa Creek. The fish passage structure and water quality monitoring program are still under review by the Agency and have not been implemented.

4. HOOD MOUNTAIN REGIONAL PARK: LANDSLIDE REPAIR PLAN

Description: The Hood Mountain Regional Park Landslide Repair Plan includes the stabilization of two active landslides in the upper Santa Rosa Creek watershed to improve fish and wildlife habitat. Upper Santa Rosa Creek provides habitat for special status species, such as steelhead and red-legged frog. A series of landslides in the watershed pose a serious threat to the overall health of Santa Rosa Creek through the introduction of fine sediment. The landslides are associated with county-mandated fire access roads. These roads have resulted in the destabilization of hillsides in several locations. The watershed in the Hood Mountain Regional Park is relatively steep, thus, stabilizing landslides presents a formidable challenge. The budgeted cost for labor and materials to the Agency was $28,900.

Slide delivers sediment to Santa Rosa Creek

Status: The Sonoma County Regional Parks hired a geotechnical/engineering firm to develop a plan to stabilize the landslides. Work conducted by the firm included test borings and laboratory testing, geologic and engineering analysis of data, and a report describing conditions, including a grading plan for slide #2. Please see Section IV for more details on slide #2.

5. BRUSH CREEK RESTORATION

Description: The purpose of the Brush Creek Restoration project is to maintain the flood conveyance capacity of Brush Creek while improving aquatic and riparian habitats. The

completed project will enhance available habitat for steelhead and other native fish, amphibians, songbirds, and small mammals along Brush Creek. In the past Brush Creek was modified to convey a 100-year flow event and provide flood protection for local homeowners. However, habitat diversity in this section of the creek was greatly diminished by channelization efforts. The project will widen the cross-sectional area of Brush Creek to permit the stream to both convey floodwaters and to increase habitat diversity along 1,200 linear feet of creek. The Agency is cosponsoring this project and funded $40,000 of the estimated $287, 000 cost of the project. Restoration will be completed in three phases beginning in 1998.

Status: Restoration of Brush Creek between the confluence with Santa Rosa Creek and Highway 12 was completed in 1998. After the streambed and banks were graded, a series of restoration and enhancement activities were instituted to provide aquatic and riparian habitat throughout the project area. A meandering low-flow channel was constructed in the streambed. Instream structures such as rock weirs, rock deflectors, and suitable substrate material were placed in the creek to promote the development of pool and riffle habitats, as well as providing bank stability. Streambanks denuded of vegetation during the sediment removal and grading phase of the project were revegetated with native plants.

Brush Creek before and after restoration

6. STREAM CHANNEL RESTORATION

Description: The purpose of the Stream Channel Restoration project is to restore salmonid habitat along Big Austin Creek that has been degraded by historic mining upstream of the site. This project would provide 13,000 square-feet of salmonid spawning habitat and includes reconstructing 1,300 feet of degraded stream channel and planting riparian vegetation. The project began in 1997 and will be implemented over 3-4 years. Work completed under the FEP 1997-1998 Work Plan included a basin hydrology study. The budgeted cost for labor and materials to the Agency for 1998-1999 was $10,000-15,000.

Root wad used to stabilize eroding creek bank

Status: Work conducted under the 1998-1999 Work Plan included construction of willow baffles, riparian planting, and bank stabilization to repair a major landslide along Big Austin Creek. Eight willow baffles were installed on the upstream end of the project area to confine the stream to a single channel and improve salmonid habitat. As high flows pass over the willow baffles, stream velocities decrease and sediment is deposited. After several high flow events the baffled areas build up with sediment and confine the creek to a single channel. Additionally, native streamside vegetation was planted to increase riparian canopy and stabilize the streambank. The large slide was repaired by installing root wads/tree trunks and large boulders at the toe of the slide to increase streambank stability.

Willow baffles two years after installation

Since the time of baffle installation, several large storms have occurred and the stream has already begun to form a single channel. Most of the tree plantings have survived the high winter flows and will provide a riparian canopy in the years to come. The large slide area has been stabilized, which has reduced input of sediment into the creek.

7. COPELAND CREEK STREAM RESTORATION

Description: The purpose of the Copeland Creek Stream Restoration project is to restore riparian and salmonid habitat along approximately 6,000 feet of Copeland Creek between Roberts/Pressley Road and Petaluma Hill Road, located east of Sonoma State University. Intensive livestock grazing has limited vegetation establishment primarily to non-native grasses and forbs, a stand of non-native eucalyptus trees, and a few isolated native trees. Restoration of this section of creek will stabilize banks, decrease creek sediment load, and improve habitat for steelhead (as well as other native fish and wildlife). The project involves constructing creek enclosure fencing, recontouring heavily eroded creek banks, and revegetating with native riparian species. This project will be completed in phases over a 3-4 year period. The budgeted cost for labor and materials to the Agency in 1998-1999 was $25,000-30,000.

Copeland Creek before restoration

Status: The first phase of the project began in 1998-1999 and included restoring and fencing the upper one-third of the site. This phase was completed in the summer and fall

1999 and is further discussed in the 1999-2000 Work Plan, below.

8. WATER QUALITY SAMPLING

Description: The Water Quality Sampling project consists of using aquatic invertebrates (e.g., aquatic insects) to infer the health of a stream. Invertebrates inhabiting streams are important indicators of water quality. By quantifying invertebrate diversity and abundance in a stream the water quality can be determined. This project entails collecting invertebrates at several reference streams identified by CDFG for a minimum of two years to establish a baseline reference condition. Invertebrate sampling began in 1997-1998. A second year of invertebrate sampling was conducted in fall 1998 and spring 1999. The budgeted cost to the Agency was $22,434.

Status: The Agency supported the Water Quality Sampling project by funding laboratory analysis of macro-invertebrates. One hundred and fifty-three macro-invertebrate samples were collected in Austin Creek, Maacama Creek, and Dry Creek watersheds and the Russian River mainstem. A consultant analyzed samples and the results were provided to CDFG Bioassessment Laboratory.

9. *ARUNDO DONAX* IN THE RUSSIAN RIVER: STUDY OF EXTENT OF THE INVASION, ECOLOGICAL IMPACTS, AND EFFECTIVE CONTROL METHODS

Description: Giant reed (*Arundo donax*) is a bamboo-like invasive weed that has infested and degraded riparian and aquatic habitats in the Russian River watershed. The purpose of the giant reed study is to determine: 1) the distribution of giant reed along the Russian River and in selected tributaries, 2) the affect of giant reed on selected physical and biotic characteristics of the aquatic environment, 3) the most effective methods for eradicating giant reed, and 4) the cost per acre of eradicating giant reed. The budgeted cost for labor and materials to the Agency was $39,650.

Giant reed invades riverbanks

Status: The giant reed study demonstrated that giant reed is having a very substantial effect on the native plant and animal communities of the Russian River riparian zone. The total extent of giant reed in the Russian River main stem is 236 acres, with the majority of this acreage (60%) occurring in the Alexander Valley. If giant reed continues to spread, the impacts to the salmonid fishery and wildlife in general will be severe. The study also demonstrated that giant reed can be effectively and rapidly controlled, unlike weeds that produce viable seed (such as yellow star

thistle). The estimated cost for control of giant reed in the Russian River is $2.8 million.

10. PIERCE'S DISEASE RIPARIAN MODIFICATION

Description: The purpose of the Pierce's Disease Riparian Modification project is to investigate methods of controlling Pierce's disease, while maintaining a viable riparian community. This disease attacks cultivated grapes and is transmitted by insects (e.g., sharpshooters) that inhabit riparian vegetation. The project involves the selective removal of sharpshooter host plants such as periwinkle, Himalayan blackberry, and wild grape. Non-targeted plants are not removed, including native riparian trees and most shrubs. Vegetation is removed using hand labor and herbicides. In areas where vegetation is removed, native trees are planted to provide vegetative cover and to provide habitat for birds, small mammals, as well as to provide shade and recruitment of woody debris into the creek for fish. The budgeted cost for labor and materials to the Agency was $4,045.

Riparian zone with selected understory removed

Status: This project included the removal of targeted understory plants in approximately four acres of riparian habitat at Simi Winery in Alexander Valley. The primary plant species removed were non-native periwinkle and escaped grape from the nearby vineyard. The results of insect trapping and the benefits of vegetation removal are discussed in the FEP Work Plan 1999-2000 section, below.

11. RUSSELL IRRIGATION SITE

Description: The Russell Irrigation Site project entails repairing an existing spring well to provide water for livestock that have been excluded from Turtle Creek. The irrigation project includes an off-creek water source by repairing a spring well and installing several watering troughs with connecting pipes. In 1997 the local landowner, Bruce Russell, participated in a voluntary livestock exclosure (fencing) project with FEP to restore the riparian and aquatic habitats along Turtle Creek. The fencing project is expected to result in the development of a mature riparian forest, stabilized streambanks, and improved aquatic and terrestrial habitats. However, the creek was the main source of drinking water for Russell's livestock. The completion of this project will allow the landowner to continue to raise livestock while maintaining quality aquatic and riparian habitat on his property. The budgeted cost for labor and materials to the Agency was $5,150.

Off-stream water trough for livestock

Status: The Russell irrigation system was completed and consisted of a new spring well and water filter, a 1,250-gallon storage tank, over 2,000 feet of pipe, and six watering troughs. The watering troughs are located in small meadows near Turtle Creek and are fed by the pipe extending from the spring well and tank. The troughs provide adequate water for livestock year-round. Two years after the installation of the project the watering system was functioning well, except one trough needed a minor repair for a leaky pipe joint.

12. NEIGHBORHOOD STREAM CLEAN-UP

Description: Neighborhood Stream Clean-up projects are conducted to augment the Agency's creek restoration efforts and increase community involvement and awareness of stream and riparian habitats. Community involvement is critical to the long-term success of restoration efforts, particularly for streams in urban areas that are subject to litter and debris accumulation. The Agency assists clean-up event organizers with the coordination of other agencies and local organizations. Clean-up events are conducted annually and are on-going. The budgeted cost for labor and materials to the Agency was $20,000-25,000.

Status: In 1998-1999 the Agency coordinated stream clean-up projects at several sites. The following discusses each clean-up event.

Santa Rosa Creek: In 1998, the Agency, Santa Rosa 4x4 Club, and Americorps conducted a clean up on “Hands Across the County Day” along Santa Rosa Creek in downtown Santa Rosa. The crews removed three nursery truckloads of debris, including a 1,000-lb water boiler, between Santa Rosa Avenue and Pierson Street.

Little Austin Creek: In October 1998, the Agency, Friends of Austin Creek, and Americorps conducted a clean-up day along Little Austin Creek. The Agency provided labor, equipment, and transportation for the clean up. Approximately four tons of debris and 25 shopping carts were removed from the creek.

Agency staff removes shopping cart from Little Austin Creek

Santa Rosa Creek: In June 1999, the Agency and Americorps crews conducted a clean-up day along Santa Rosa Creek between Santa Rosa Avenue and Willowside Avenue. Litter filling half a nursery truck was removed from the creek. This is substantially less litter than in past years, most likely due to increased clean-up efforts.

13. RUSSIAN RIVER CLEAN-UP

Description: For the past ten years, Sequoia Paddling Club has spearheaded the Russian River Clean-up project, which annually removes enormous amounts of debris and garbage. The Russian River receives tremendous visitor usage during the summer months, and is subject to litter and debris accumulation. The event has drawn several hundred volunteers in recent years.

Sequoia Paddling Club was responsible for organizing volunteers and interested parties for the clean-up crews. The budgeted cost for labor and materials to the Agency was $6,500.

Status: The clean-up was conducted along 40 miles of the Russian River and Dutch Bill Creek. The Sequoia Paddling Club was assisted in their clean-up by a variety of groups and individuals including local schools, Boy/Girl Scout Troops, fire department, Agency staff, local neighbors, and State Representative Virginia Strom-Martin. Over 4.2 tons of trash, 1,200 pounds of recyclable materials (plastic, glass, aluminum), 32 cubic yards of metal, 111 tires, and assorted hazardous materials (antifreeze, oil, car batteries) were removed from the river.

14. MISCELLANEOUS PROJECTS CONTINGENCY FUND

Description: The Miscellaneous Projects Contingency Fund provides a source of expertise and materials for smaller projects that are not included in the current FEP funding cycle. There are a variety of small non-profit groups, such as school programs and local environmental groups, implementing effective fishery restoration projects in Sonoma County. The projects conducted by these groups are often on a relatively short time frame and their plans have not been finalized prior to the completion of the Agency's annual FEP Work Plan. A contingency fund allows the Agency to provide assistance to groups during the current fiscal year. Generally, costs associated with projects assisted by this fund are minor. The budgeted cost for labor and materials to the Agency was $15,000-20,000.

Status: Several creek restoration projects were implemented using the contingency fund, including the following.

Dutch Bill Creek Fish Habitat Improvement: This improvement project consisted of constructing instream log structures to provide cover for salmonids and weirs to create pool habitat along Dutch Bill Creek, a major tributary to the lower Russian River. Steelhead have been recently reported spawning in the creek and coho salmon have had a historical presence. Weirs and instream structures were installed at 14 sites along 2,000 feet of stream. The Goldridge RCD implemented this project, and materials and transportation were funded by the Agency. The total cost to the Agency was $3,280.

Instream log structure along Dutch Bill Creek

Huff Property Bank Stabilization: Agency staff restored an eroding streambank along an unnamed tributary of Mark West Creek in cooperation with the landowners. The bank was stabilized by constructing a willow baffle at the base of the bank to deflect floodwaters away from the erosion-prone bank.

Rock weir along Green Valley Creek

Green Valley Pool Habitat Improvement: This improvement project consisted of installing three rock weirs to create pool habitat for salmonids along 1,500 feet of Green Valley Creek. This creek is a major tributary to the lower Russian River and contains important spawning and rearing habitat for steelhead and coho salmon. Weir boulders were securely connected with cables and the installation of low-flow spillways ensure the passage of fish. This project was implemented by the Gold Ridge RCD in response to CDFG's recommendation to enhance pool habitat along the creek. The Agency funded the materials and transportation for the project at a cost of $2,325.

Peterson Creek Riparian Restoration Demonstration: This restoration project along Peterson Creek near Piner High School was a collaborative effort involving students, local neighbors, Americorps, and the Agency. Trash and non-native vegetation along the creek were removed and native trees and shrubs planted. This project will reduce erosion, enhance fish and wildlife habitat, and provide a site for environmental education. The Agency supported this project by providing funds for the native plants and irrigation system at a cost of $535.